

SALMON TECHNICAL TEAM REPORT ON STANDARDIZED BYCATCH REPORTING METHODOLOGY

Introduction

The Salmon Technical Team (STT) was first briefed at their November 9, 2020 online meeting by Council Staff Officer Brett Wiedoff on the National Marine Fisheries Service (NMFS) final rule requiring all fishery management plans (FMPs) to establish a standardized bycatch reporting methodology (SBRM) to assess the amount and type of bycatch occurring in its fisheries (82 FR 6317). Since that meeting, the STT was briefed again at the June 2021 meeting, and met to discuss this topic in August 2021.

SBRM will be used to estimate bycatch as it is defined by the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and includes fish which are harvested in a fishery, but which are not sold or kept for personal use and includes economic discards and regulatory discards. Our review of the salmon FMP focused on characterizing bycatch occurring in salmon fisheries, the feasibility of implementing the SRBM, the uncertainty in the data, and how the data will be used to assess the type and amount of bycatch occurring in the fishery. Through this review the STT recommends adding new descriptions of procedures used to assess salmon bycatch in Preseason Report III and amending the FMP to meet the purpose of SBRM.

In this report, we (1) describe monitoring programs that generate bycatch estimates for commercial and recreational ocean salmon fisheries, (2) describe a plan to meet SBRM requirements, and (3) propose draft new language for the salmon FMP that would provide further details on SBRM for salmon fisheries.

Descriptions of salmon bycatch estimation from ocean salmon fisheries

Treaty Indian troll salmon fishery

All landed salmon in the Treaty Troll fishery are reported to the tribe on a fish ticket. That catch data is compiled and shared with state co-managers in a timely manner; this information is also shared with the STT to complete Preseason reports. Each treaty Indian tribe in western Washington maintains a monitoring staff that samples salmon that are caught in fisheries. No information is gathered on released salmon from the Treaty Troll fishery. Independent estimates of observed Chinook and coho bycatch and bycatch mortality are not produced, rather bycatch and bycatch mortality are derived by scaling preseason expected catch and mortality to the observed catch. Historical retained species contact information combined with abundance forecasts are used by the STT preseason to project the number of salmon by species that will be contacted and the estimated total bycatch mortality for Chinook and coho salmon.

Washington non-tribal commercial troll salmon fishery

All landed salmon in the Washington commercial troll salmon fishery are recorded on fish receiving tickets by commercial fish buyers. Additional sampling by Washington Department of Fish and Wildlife (WDFW) for the duration of the commercial troll salmon season, typically May through September, provides a verification of fish ticket catch accounting. No information is gathered on released salmon from the commercial troll fishery. Independent estimates of observed Chinook and coho bycatch and bycatch mortality are not produced, rather, bycatch and bycatch mortality are derived by scaling preseason expected catch and mortality to the observed catch. Historical retained species contact information combined with abundance forecasts are used by the STT preseason to project the number of salmon by species that will be contacted and the estimated total bycatch mortality for Chinook and coho salmon.

Oregon commercial troll salmon fishery

All landed salmon in the Oregon commercial troll salmon fishery are recorded on fish receiving tickets by commercial fish buyers. Additional sampling by Oregon Department of Fish and Wildlife (ODFW) for the duration of the commercial troll salmon season, provides a verification of fish ticket catch accounting. No information is gathered on released salmon from the commercial troll fishery. Independent estimates of observed Chinook and coho bycatch and bycatch mortality are not produced, rather, bycatch and bycatch mortality are derived by scaling preseason expected catch and mortality to the observed catch. Historical retained species contact information combined with abundance forecasts are used by the STT preseason to project the number of salmon by species that will be contacted and the estimated total bycatch mortality for Chinook and coho salmon.

California commercial troll salmon fishery

All salmon landed in the California commercial troll fishery are recorded on commercial landing receipts and reported in an electronic fish ticket system. The California Department of Fish and Wildlife (CDFW) has an extensive sampling program which monitors commercial salmon landings at all major salmon ports in California. All salmon landed on each sampled vessel are observed and counted, and interviews are conducted to assess the number of sublegal-sized Chinook released during the trip. The target sampling rate for the commercial salmon fishery is a minimum of 20 percent of total pounds landed per major port and half month period. Estimates of total salmon bycatch are made for each time-area cell by expanding interview totals by that cell's sampling expansion. Total bycatch mortality for each species is then calculated by applying a hook-and-release mortality rate to the number of released fish and adding in the number of estimated losses resulting from drop-off mortality.

Washington recreational salmon fishery

Landings and releases of salmon are estimated through a comprehensive creel program present in Washington's ocean access ports by WDFW. Primary ports of ocean access and ports that contribute ocean salmon angling effort of significance are monitored for the duration of the recreational ocean salmon season, typically mid-June through September. All landed salmon on interviewed vessels are counted, and the individuals on the boat are questioned as to any releases

that occurred. The releases are recorded by species but are not narrowed to reason for release (i.e. too small, not using legal gear for salmon, closed season, etc.). Both retained and released fish are expanded by the number of recreational boats within the sampling strata divided by the number of interviewed recreational boats within the same sampling strata. Estimates of salmon that are retained as well as salmon that are released are provided to the Recreational Fishery Information Network (RecFIN, recFIN.org).

Chinook and coho bycatch is estimated from a combination of dockside interview data, on-board observer data, and voluntary on-water trip reports (VTRs) completed by anglers while fishing. Charter and private boats are systematically sampled at a minimum target rate of 20 percent within each boat type. Total encounters are estimated from collected data on species, size class, and mark status. Total bycatch mortality is then calculated by applying the hook-and-release mortality rate (14 percent) to the number of released fish and adding in the number of estimated losses resulting from drop-off mortality (5 percent).

Oregon recreational salmon fishery

Landings and releases of salmon are estimated through a comprehensive creel program along the Oregon Coast by ODFW. Several ports are monitored year-round, others from March through October, others from May through September/October, and a few others from June through September. All landed salmon on interviewed vessels are counted, and the individuals on the boat are questioned as to any releases that occurred. The releases are recorded by species but are not narrowed to reason for release (i.e. too small, not using legal gear for salmon, closed season, etc.). Both retained and released fish are expanded by the number of recreational boats within the sampling strata divided by the number of interviewed recreational boats within the same sampling strata. Details are available on the sampling project and estimation process at http://www.dfw.state.or.us/MRP/salmon/docs/ORBS_Design_2021.pdf. Estimates of salmon that are retained as well as salmon that are released are provided to RecFIN.

Chinook and coho bycatch is estimated from of dockside interview data. Charter and private boats are systematically sampled at a minimum target rate of 20 percent within each boat type. Total encounters are estimated from collected data on species, size class, and mark status. Total bycatch mortality is then calculated by applying the hook-and-release mortality rate (14 percent) to the number of released fish and adding in the number of estimated losses resulting from drop-off mortality (5 percent).

California recreational salmon fishery

CDFW has extensive sampling programs monitoring recreational ocean salmon landings and releases made by both Commercial Passenger Fishing Vessels (CPFVs) and private recreational skiffs. Sampling is conducted in all major ports and primary access sites with active salmon vessels. All salmon landed on each sampled vessel are counted and observed, and interviews are conducted to assess gear type used (trolling or mooching) and the number of sublegal-sized Chinook released during the trip. In the CPFV sector, a minimum of 20 percent of total salmon-targeting CPFV trips are sampled per major port and half month period. In the private skiff sector,

a random stratified sampling design is used to target a minimum of 20 percent of available site-days per major port and half month period.

Estimates of salmon bycatch are made for each recreational sector and time-area cell by expanding interview totals by that cell's sampling expansion. Total bycatch mortality is then calculated by applying gear specific hook-and-release mortality rates to the number of released fish and adding in the number of estimated losses resulting from drop-off mortality.

Descriptions of groundfish bycatch estimation from ocean salmon fisheries

Treaty Indian troll salmon fishery groundfish bycatch

Each treaty tribe on the coast has their own version of a regulation that pertains to incidental groundfish catch, essentially if the groundfish species is legally allowed to be retained then the fisher is required to land and document it on a fish ticket. No information is gathered on released groundfish from the treaty troll salmon fishery.

Washington non-tribal commercial troll salmon fishery groundfish bycatch

All landed fish species in the Washington commercial troll salmon fishery are recorded on fish receiving tickets by commercial fish buyers. No information is gathered on released fish from the commercial troll fishery. Estimates of groundfish bycatch and bycatch mortality in the commercial troll fishery are not produced.

Oregon commercial troll salmon fishery groundfish bycatch

All landed fish species in the Oregon commercial troll salmon fishery are recorded on fish receiving tickets by commercial fish buyers. For non-salmon species, there is not a requirement to provide the number of fish, only the pounds landed. No information is gathered on released fish from the commercial troll fishery. Estimates of groundfish bycatch and bycatch mortality in the commercial troll fishery are not produced.

California commercial troll salmon fishery groundfish bycatch

All salmon landed in the California commercial troll fishery are recorded on commercial landing receipts and reported in an electronic fish ticket system. No data on released fish of any species are reported on commercial landing receipts. No information is collected on released fish (non-salmon) as part of CDFW's commercial salmon sampling program. Estimates of groundfish bycatch and bycatch mortality in the commercial troll fishery are not produced.

Washington recreational salmon fishery groundfish bycatch

Landings and releases of all species are estimated through a comprehensive creel program present in Washington's ocean access ports by WDFW. Primary ports of ocean access and ports that contribute ocean angling effort of significance are monitored for the duration of ocean recreational seasons, typically mid-March through mid-October. All landed fish on interviewed vessels are counted by species, and the individuals on the vessel are questioned as to any releases that occurred. The releases are recorded by species but are not narrowed to reason for release (i.e. too small, illegal species, closed season, etc.). Both retained and released fish are expanded by the

number of recreational boats within the sampling strata divided by the number of interviewed recreational boats within the same sampling strata. Stratified estimates of both groundfish retained and released during all trips, including trips when salmon are the target species, are produced monthly by WDFW. Estimates of all fish that are retained as well as those released (by species) are provided to RecFIN. Depth-dependent mortality is estimated by RecFIN for released groundfish.

Oregon recreational salmon fishery groundfish bycatch

Landings and releases of all species are estimated through a comprehensive creel program along the Oregon Coast by ODFW. Several ports are monitored year-round, others from March through October, others from May through September/October, and a few others from June through September. All landed fish on interviewed vessels are counted by species, and the individuals on the vessel are questioned as to any releases that occurred. The releases are recorded by species but are not narrowed to reason for release (i.e. too small, illegal species, closed season, etc.). Both retained and released fish are expanded by the number of recreational boats within the sampling strata divided by the number of interviewed recreational boats within the same sampling strata. Details on the estimation process for the Ocean Recreational Boat Survey can be found at http://www.dfw.state.or.us/MRP/salmon/docs/ORBS_Design_2021.pdf. Estimates of all fish that are retained as well as those released (by species) are provided to RecFIN.

California recreational salmon fishery groundfish bycatch

CDFW's recreational sampling programs monitor landings and releases of all species made by both Commercial Passenger Fishing Vessels (CPFVs) and private recreational skiffs. While sampling salmon-targeting CPFV trips, data are collected on the number of landed and released salmon, but no data are collected on non-salmon releases. While sampling salmon-targeting private skiff trips, data are collected on all landed and released species. Estimates of all fish that are retained as well as those released (by species) are provided to RecFIN.

STT assessment of current commercial troll salmon fishery groundfish bycatch

After a review of the commercial troll (tribal and non-tribal) and recreational ocean salmon fisheries, it was discovered that the bycatch of groundfish in the salmon-directed commercial fisheries was not being reported in either salmon or groundfish documents. Groundfish bycatch in the salmon troll fishery appears to be last assessed when developing the 2006 Environmental Assessment (EA) which reads "Bycatch of fish other than salmon in salmon fisheries is generally very limited. Only hook-and-line gear is allowed in ocean salmon fisheries and regulations allow for retention of most groundfish species and limited numbers of Pacific halibut that are caught incidentally while salmon fishing."

The STT examined the number of active permits and the number of vessels landing salmon in California, Oregon, and Washington, which showed fishery participation has decreased or stayed stable since at least 2003 (Figure 1). The commercial salmon troll fishery has not had notable changes in gear type, structural changes in fishery regulations, or major expansion of open fishing areas. While some groundfish stocks have now rebuilt to higher biomass levels than in 2006, it is

possible that groundfish encounters in the salmon fishery could have increased. However, the rate of groundfish encounters (as a proportion of stock abundance) is unlikely to have increased, given the stability or decrease in commercial salmon fishery participation. Furthermore, all non-salmon species (except halibut and highly migratory species) must be released when fishing in the federal Rockfish Conservation Area (RCA) unless a vessel is equipped with Vessel Monitoring System (VMS). Vessels with VMS may retain a limited quantity of some groundfish. However, the proportion of salmon vessels equipped with VMS is thought to be relatively small.

Thus, after its examination of the information available, the STT has concluded that (1) the 2006 EA statement that "...regulations allow for retention of most groundfish species..." is no longer accurate since retention of most groundfish stocks is prohibited in the federal RCA for much of the salmon fleet and (2) the 2006 EA statement that "Bycatch of fish other than salmon in salmon fisheries is generally very limited" likely holds true today.

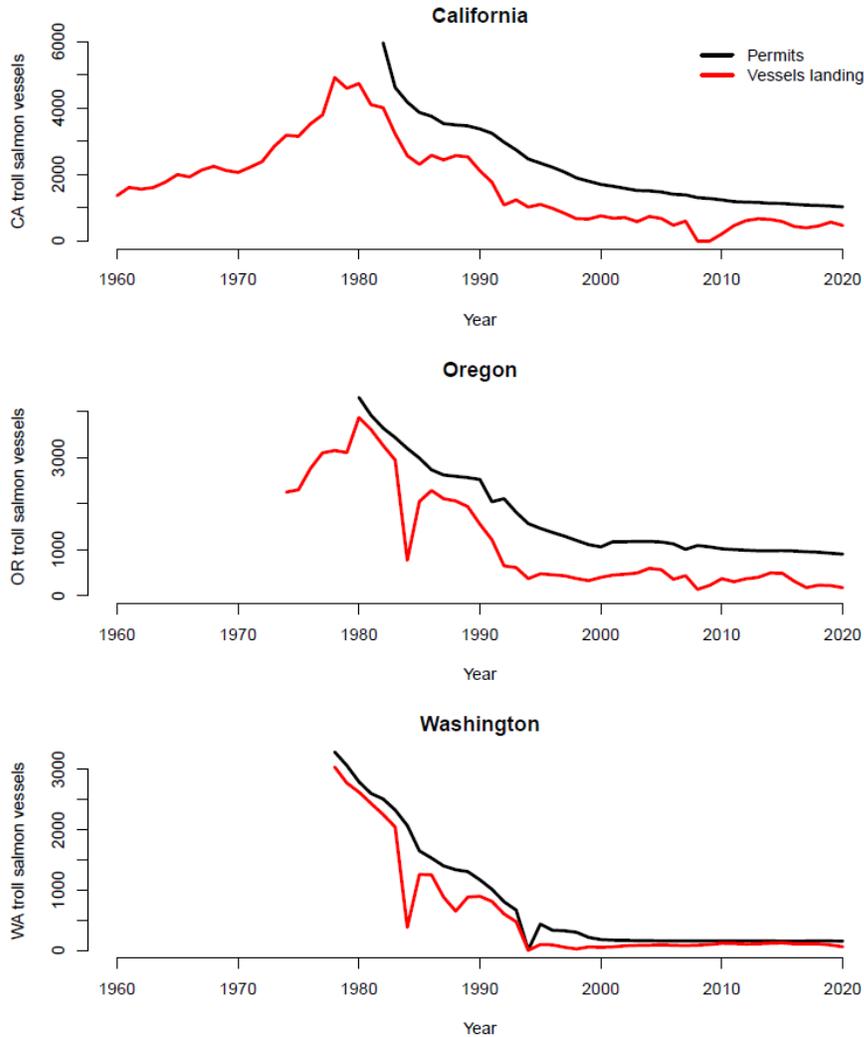


Figure 1. The number of active permits and vessels landing salmon in the commercial salmon troll fishery by state. Data sourced from PFMC 2021, Appendix D.

Plan to meet SBRM requirement

Appendix to Preseason Report III

Salmon bycatch projections for the upcoming salmon seasons, and postseason salmon bycatch estimates from the previous season are presented in Table 6 of Preseason Report III. Footnotes to Table 6 describe aspects of the bycatch enumeration methodology, but do not fully describe the methods used. To more comprehensively describe the methods used to make preseason and postseason estimates of bycatch, the STT will develop an appendix to future versions of Preseason Report III. The appendix will describe the data and methods used to generate bycatch projections and estimates, and how the methods differ for commercial and recreational fisheries and along the coast.

FMP amendment

The current FMP contains a section on bycatch (Section 3.5), that includes the definition of bycatch and management intent (Section 3.5.1), the occurrence of bycatch (Section 3.5.2), and a description of standard reporting methodology. These sections reflect the intent of SBRM and meet the general requirement of addressing bycatch and SBRM but could be updated and augmented to better document how SBRM requirements are met, identify where descriptions of bycatch estimation methodologies can be found, document sources of bycatch estimates, and describe the uncertainty inherent in bycatch estimates. As such, the STT recommends that the proposed new language be inserted in Section 3.5 of the FMP. Changes to the current FMP Language are also intended to provide consistency across FMPs in addressing SBRM. (underline/~~strike through~~ in the following section show proposed changes)

3.5 BYCATCH

“Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.”

Magnuson-Stevens Act, National Standard 9

“Establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent practicable and in the following priorityB

(A) minimize bycatch; and

(B) minimize the mortality of bycatch which cannot be avoided;”

Magnuson-Stevens Act , § 303(a)(11)

3.5.1 Definition and Management Intent

“Bycatch” for the purposes of this fishery management plan is defined as fish harvested (caught) in an ocean salmon fishery which are not sold or kept for personal use and includes economic discards, regulatory discards, and fishery mortality due to an encounter with fishing gear that does not result in capture of fish. Bycatch does not include any fish that legally are retained in a fishery and kept for personal, tribal, or cultural use, or that enter commerce through sale, barter, or trade. In addition, under the provisions of the MSA, bycatch does not include salmon released alive under a recreational catch-and-release fishery management program.

Under the salmon FMP, the primary bycatch that occurs is bycatch of salmon species. Therefore, the Council’s conservation and management measures shall seek to minimize salmon bycatch and bycatch mortality (drop off and hooking mortality) to the greatest extent practical in all ocean fisheries. When bycatch cannot be avoided, priority will be given to conservation and management measures that seek to minimize bycatch mortality and ensure the extended survival of such fish. These measures will be developed in consideration of the biological and ecological impacts to the affected species, the social and economic impacts to the fishing industry and associated communities, and the impacts upon the fishing, management, and enforcement practices currently employed in ocean salmon fisheries (see also Section 6.5.3).

Shared EC Species, identified in Table 1-4, could continue to be taken incidentally without violating Federal regulations, unless regulated or restricted for other purposes, such as with bycatch minimization regulations. The targeting of Shared EC Species is prohibited.

3.5.2 Occurrence

The present bycatch and bycatch mortality estimates and methodologies for salmon in salmon fisheries are documented by the STT annually in the SAFE and Preseason Report III documents. Beginning in 2022, descriptions of bycatch estimation methodologies are included in an appendix of Preseason Report III. Bycatch of salmon in Pacific Coast trawl fisheries is documented in Amendment 12 (PFMC 1997a), ~~More recent information is reported~~ in a Section 7 biological opinion regarding salmon bycatch in the groundfish fishery (NMFS 2006~~2017~~), and ~~a subsequent reports~~ that summarizes the annual bycatch of salmon ~~in recent years~~ (e.g. Bellman et al. 2011). Salmon fisheries or fishery practices that lack or do not have recent observation data or estimates of bycatch composition and associated mortality rates will be identified by the Council for future research priority in their biannual Research and Data Needs Report to NMFS. Future changes in the procedures and methodologies will occur only if a comprehensive technical review of existing biological data justifies a modification and is approved by the STT, SSC, and Council. All of these changes will occur within the schedule established for Salmon Methodology Review and apart from the preseason planning process (Council Operation Procedure 15, PFMC 2008).

Bycatch of fish other than salmon in salmon fisheries is generally very limited. Only hook-and-line gear is allowed in ocean salmon fisheries and regulations allow for retention of most groundfish species outside of restricted areas and limited numbers of Pacific halibut that are caught incidentally while salmon fishing. Within restricted areas vessels eligible to retain groundfish are allowed to retain select groundfish species. The number of active permits and the number of vessels landing salmon in Washington, Oregon, and California indicate that fishery participation has generally decreased or been stable since at least 1980. In addition, the commercial salmon troll fishery has not had changes in gear type, structural changes in fishery regulations, or major expansion of open fishing areas. Based on this weight of evidence it is unlikely that characteristics of the groundfish bycatch have increased over time, nor is it expected to increase in the future to a point that would disrupt the estimation of fishing mortality of groundfish stocks or effect the ecosystem.

3.5.3 Standardized Bycatch Reporting Methodology

Consistent procedure(s) used to collect, record, and report salmon bycatch data have been established that are used to assess the amount and type of bycatch occurring in ocean salmon fisheries. The characteristics of bycatch in the fishery will be ~~Within~~ addressed within the salmon preseason planning process and documented annually at its conclusion. Management alternatives will be assessed for the effects on the amount and type of salmon bycatch and bycatch mortality. Estimates of salmon bycatch and incidental mortalities associated with salmon fisheries will be included in the modeling assessment of total fishery impact and assigned to the stock or stock complex projected to be impacted by the proposed management measures. The resultant fishery impact assessment reports for the ocean salmon fisheries will specify the amount of salmon bycatch and bycatch mortality associated with each accompanying management alternative. The final analysis of Council-adopted management measures will contain an assessment of the total salmon bycatch and bycatch mortality for ocean salmon fisheries and include the percentage that these estimates represent compared to the total harvest projected for each species, as well as the relative change from the previous year's total bycatch and bycatch mortality levels.

For some fishery sectors, there may not be any direct observation or reporting of salmon bycatch; in such cases, standard bycatch rates developed using the best scientific information will be used to estimate bycatch, which can introduce uncertainty in the data. Although this uncertainty cannot be described

quantitatively, the majority of the bycatch uncertainty is assumed to be from hook mortality and 'drop-off' rates which are estimated based on the best scientific information available. Salmon fisheries or fishery practices that lack or do not have recent bycatch data or estimates of bycatch composition and associated mortality rates will be identified by the Council for future research priority in their biannual Research and Data Needs Report to NMFS to minimize data uncertainty.

The data used to assess salmon bycatch in the ocean salmon fishery is collected through sampling and monitoring programs conducted in various ports along the west coast. Data from the commercial salmon troll fisheries are documented on commercial landing receipts and reported in an electronic fish ticket system. Data from recreational ocean fisheries are estimated through a comprehensive creel program, and estimates of salmon that are retained as well as salmon that are released are provided to RecFIN (recFIN.org).

References

NMFS. 2017. Reinitiation of Section 7 Consultation Regarding the Pacific Fisheries Management Council's Groundfish Fishery Management Plan. December 11, 2017. NMFS Consultation No.: WCR-2017-7552. 313p.

PFMC (Pacific Fishery Management Council). 2021. *Review of 2020 Ocean Salmon Fisheries: Stock Assessment and Fishery Evaluation Document for the Pacific Coast Salmon Fishery Management Plan.* (Document prepared for the Council and its advisory entities.) Pacific Fishery Management Council, 7700 NE Ambassador Place, Suite 101, Portland, Oregon 97220-1384.

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